Proceedings of the Iowa Academy of Science

Volume 47 | Annual Issue Article 70

1940

Variation in the Liquid Structure of Water with the Solutions of Thirty Strong Electrolytes

G. W. Stewart
State University of Iowa

STUDIES IN THE PROPERTIES OF SUSPENSOIDS

MELVIN D. CLARK AND BARBARA J. SELZER
(INTRODUCED BY L. D. WELD)

A quantitative investigation of the dielectric and light-scattering properties of both dielectric and conducting suspensoids such as rosin, starch, carbon, and metals, suspended in dielectric media, and their dependence upon such variable factors as particle density, particle size, the dielectric and optical constants of the suspensoid and the suspending medium, and the wave length of the incident light.

DEPARTMENT OF PHYSICS,
COE COLLEGE,
CEDAR RAPIDS, IOWA.

VARIATION IN THE LIQUID STRUCTURE OF WATER WITH THE SOLUTION OF THIRTY STRONG ELECTROLYTES

G. W. STEWART

The study of the change in the liquid structure of water with concentration of strong electrolytes in solution has been extended to thirty-one cases. In all of them there is evidence, given by X-ray diffraction measements, to indicate that the structure of water is modified similarly, and this is evidently an increase of density of the water with concentration of the ions. Moreover, there is a roughly constant quantitative relation between the influence by the wide concentration of ions on the density of the solvent and on the X-ray diffraction intensity distribution. In addition to the thirty-one cases of ions with apparent molal volume decreasing with concentration, $KClO_3$, $(NH_4)_2Cr_2O_7$ and $Ba(OH)_2$ seemed to show no similarity among themselves as to the effect on the liquid structure.

DEPARTMENT OF PHYSICS,
STATE UNIVERSITY OF IOWA,
IOWA CITY, IOWA.